

Status of the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1.-8 (Cancelled)

9. (new) A charge pump, comprising:

an input/output (I/O) circuit that generates a differential output signal and a control signal; and

a feedback circuit receiving the differential output signal from the I/O circuit and producing a feedback signal that is transmitted to the I/O circuit,

wherein the feedback circuit includes a transconductance section and a compensation section, each separately receiving the differential output signal, the compensation section being used to reduce swing in the feedback signal,

wherein the I/O circuit receives first and second differential input signals from a filter and produces the differential output signal therefrom, and

wherein the control signal is generated from the first and second differential input signals and the feedback signal and is transmitted to a voltage controlled oscillator.

10. (new) The charge pump of claim 9, wherein:

the transconductance section produces a first current signal;

the compensation section produces a second current signal;

the feedback signal is comprised of more of the first current signal than the second current signal during a first range of values of the differential output signal; and

the feedback signal is comprised of a more of the second current signal than the first current signal during a second range of value of the differential output signal.

11. (new) A phase-locked loop (PLL), comprising:
 - a phase detector;
 - a filter;
 - a charge pump; and
 - a voltage controlled oscillator (VCO),
 - wherein the phase detector receives an input signal and a signal from the VCO and produces a phase detector differential output signal therefrom,
 - wherein the filter receives the phase detector differential output signal and produces a filtered differential output signal therefrom,
 - wherein the charge pump comprises,
 - an input/output (I/O) circuit that receives the filtered differential output signal and generates a I/O differential output signal and a control signal; and
 - a feedback circuit that receives the I/O differential output signal and produces a feedback signal therefrom, which is transmitted to the I/O circuit,
 - wherein the feedback circuit includes a transconductance section and a compensation section, each separately receiving the I/O differential output signal, the compensation section being used to reduce swing in the feedback signal, and
 - wherein the control signal is generated from the filtered differential input signals and the feedback signal and is transmitted to the voltage controlled oscillator.

12. (new) The PLL of claim 11, wherein:
 - the transconductance section produces a first current signal;
 - the compensation section produces a second current signal;
 - the feedback signal is comprised of more of the first current signal than the second current signal during a first range of values of the I/O differential output signal; and
 - the feedback signal is comprised of a more of the second current signal than the first current signal during a second range of value of the I/O differential output signal.